dynamite is placed and exploded, the rock shattered by blasting has to be removed, and the borer is then pushed forward and the operation continued. On the northern side this cycle of boring, blasting and removal is effected in about seven hours, on the southern side in about an hour less, more time being required to remove the *débris* on the north than on the south. The transport of the masses of rock detached by the blasting is necessarily a work of enormous labour, and compels the boring machine to be idle while it is effected. Herr Brandt designed a machine to accelerate the removal of the rubbish by making it slide along smooth iron plates arranged to receive it. But the application has not proved so useful as was anticipated, and its employment is at present abandoned.

In the explosion of the blasting charge, liquid air or oxygen has been used with good effect. The charcoal covering of the charge is, shortly before use, steeped in liquid oxygen, and the recovery of the gaseous form has the advantage of mitigating some of the evils the presence of carbonic oxide tends to produce. But improvements in this process are still demanded, and experiments are being carried on by Prof. Linde, of Munich, with a view to making the combustion more perfect and removing some of the noxious vapours due to blasting.

We gather that the attempts made to lower the temperature in the cutting have not proved quite as successful as was anticipated. As mentioned in our former article, it was proposed to effect the necessary cooling by the distribution throughout the workings of a water dust under considerable pressure. In pursuance of this plan some 70 litres of water per second, and under a pressure of 100 atmospheres, are scattered throughout the gallery by means of machines placed in the crossway alleys that lead from the main boring to the parallel gallery. Such a liberal expenditure of water has been found sufficient to enable miners to continue working at depths where the ordinary temperature is greater than has been encountered in the Simplon. But Herr Ernst is not yet satisfied; he says that the temperature question is still unsolved, and gives the following figures for comparison with the Gotthard workings.

	Temp. at 7·3 km. from north entrance.	Temp. at 7·05 km. from south entrance.
April and May, 1880 ...	30°·46 C. ...	30°·53 C.
June, 1882 (after perforation)	23·73 C. ...	23·39 C.
July, 1883	22·20 C. ...	23·1 C.

But in the Simplon, at only 1400 metres from the southern entrance, a temperature of 30° C. has been experienced, while the water of a spring near that point showed a temperature of 33° C. Fortunately, the water supply is adequate and easily accessible whether on the north or south side. On the north the Rhone feeds a reservoir formed 44 m. above the tunnel entrance at the rate of 6000–8000 litres per hour. At the southern end, near Isella, the Diveria is equally available, and from both sources it is estimated that the undertaking has at hand the equivalent of 2000 h.p., sufficient for the driving of the pressure-pumps and boring machinery, the ventilation of the shaft, the mechanical workshops, the electric illumination and numerous experimental works.

Recalling the carelessness of life and enervating sickness that decimated the workpeople in the case of the Gotthard tunnel, it is refreshing to notice the care and attention that are bestowed on the comforts of the operators in this instance. Provision is made for frequent baths, and changes of clothes are insisted upon, the maintenance of a simple system ensuring regularity and obedience. A school and hospital, not to mention a theatre, are provided for the use of the workpeople, and hostelries are erected wherein the meals are arranged at fixed and certainly very low prices. A regular meal of soup, meat and vegetables costs but 50 cents, the full ration for the day being 1·10 francs. The daily wage does not seem large at 3 or 4 francs, but apparently is sufficiently attractive, and we are assured that the careful wage earner can send a modest contribution to his relatives every month. A whole colony has settled down under the shadow of the Simplon, but the man whose genius has called into being this hive of workers, whose activity has encouraged and animated the whole undertaking, whose resourceful energy has overborne so many difficulties, is no longer at the fore to guard against future dangers and to guide the whole to a successful issue. Herr Brandt died in November 1899, when progress was slow but assured. He has, however, left four able lieutenants, who, trained in his school and possessed of not less devotion and energy, will carry through the arduous work and permit us to see yet another and the longest tunnel under the Alps pushed to a successful termination.

NOTES.

Prof. E. van Beneden, professor of zoology and comparative anatomy in the University of Liège, has been elected a correpondant of the Paris Academy of Sciences in succession to the late Sir William Flower.

The next meeting of the American Association for the Advancement of Science will be held in Denver, Colorado, on August 24–31. The membership of the Association is now larger than it ever was before, more than eight hundred new members having been elected within the past year. As already mentioned, it is proposed to hold a winter meeting each year in the week in which New Year's day falls, and the summer meeting may eventually be omitted altogether. Of the fourteen universities forming the Association of American Universities, twelve already do not open their terms until after the week in which New Year's day occurs, or have arranged not to do so, and it is expected that the remaining two will come to the same decision. A convocation week will thus be set aside for the annual meetings of scientific and learned societies, and the difficulty of getting men of science together during the summer holidays will be avoided.

A new magnetic observatory is being established just now in France. It is situated at a distance of only thirty miles from Parc St. Maur, where records have been rendered impossible, electrical railways using the earth for return currents having been laid in almost every direction. The new observatory is situated in the small parish of Villepreux, in a district occupied by farms, cornfields and woods. The authorisation was granted by the Government only when the railway companies had paid to the National Treasury a sum of 1200*l.*, sufficient for paying all the expenses of the new building. These have been greatly diminished because the land covers about ten acres belonging to the Government, and some old buildings without any artistic value can be demolished for procuring the stones required in order to construct the magnetic pavilions and a house for the observer. M. Moureau will continue to reside at Parc St. Maur, and the new observatory will be considered as an accessory to the old one.

The importance of the scientific study of Africa and its native inhabitants has often been urged in these columns. We notice, therefore, with much satisfaction that the African Society has been formed with the object of enlarging and extending the work done by the late Miss Mary Kingsley, so as to include the whole of Africa in the field of operations. The Society will thus not only commemorate the name and continue the investigations of Miss Kingsley, but should lead to the organised investigation of the native races of Africa, the natural history, resources, diseases and other subjects upon which exact knowledge is required. In Germany the publication of a journal, as well as of some books dealing with many of these subjects, has already been inaugurated under the auspices of the Government. In France an independent society, more on the lines of what is now proposed, is at work in French Africa, and other European nations are advancing in the same direction. England ought not to be behind in this work, and the new society will do good service by encouraging interest in its objects. At the meeting held on Friday last, when the first meeting of the Society was held, the Marquis of Ripon, who occupied the chair as president, pointed out the need for scientific research in Africa. In order to discharge the responsibilities of Empire it is essential, he remarked, to set to work to understand the full and complete nature of the problems with which we had to deal, to study the whole field of African affairs, and, above all, to endeavour to understand, so far as might be possible, the thoughts, the views, the opinions and laws of the people. It is only by this means that we can arrive at a state of things in which our administration is likely to be successful. The secretary of the Society is Mr. R. Sewell, 22, Albemarle Street, London, W., to which address all communications should be sent.

THERE is no doubt that the establishment of an experimental tank in which models of ships could be tested for resistance, form, stability and other qualities would benefit the science of naval architecture in this country. The subject was brought before the meeting of the Institution of Naval Architects at Glasgow last week, and received much support. Dr. Elgar directed attention to this question in describing how the Government tank at Washington was available for the use of private shipbuilders on the payment of a fee merely covering expenses. Mr. A. F. Yarrow, referring to this statement, pointed out that the British Admiralty had an experimental tank of their own at Haslar, near Portsmouth. There was one other tank in this country, which was owned by a private shipbuilding firm. Mr. Yarrow submitted that, having in view the rapid increase in competition in shipbuilding, it was desirable that no stone should be left unturned by the shipbuilders in this country to keep well to the front, and that all the means modern knowledge could give should be made available for ship designers. He therefore proposed that the Institution of Naval Architects should take into consideration whether such a tank should not be established under its auspices, so that it might be available, not only for shipbuilders in this country and members of the Institution, but also for all willing to pay for the information to be obtained, irrespective of nationality. Sir Nathaniel Barnaby referred to the immense benefit that had accrued to the science and practice of naval architecture by the investigations of the late Mr. Froude, which he had carried out by means of the experimental tank he ad originated, and by means of which various qualities of different forms of ship could be determined with models of practicable size. At the present time all types of British war vessels were tried in this way. The resolution suggested by Mr. Yarrow was to the following effect:—"That this meeting, having regard to the desirability of establishing a tank in this country for testing the resistance of models, and which might be available for all shipbuilders, request the council of the Institution to take the matter into serious consideration with a view to arriving at the best means of carrying out the suggestion." This was put as a motion by Lord Brassey and seconded by Sir Nathaniel Barnaby, and carried with acclamation.

DURING the past few days exceptionally high temperature conditions have prevailed in New York and the neighbourhood, and have resulted in numerous deaths from heat apoplexy. On Monday shade temperatures from 103° Fahr. to 111° Fahr. were recorded, and the official reading was 98° Fahr. The minimum night temperature was 87° Fahr.

THE Berlin correspondent of the *Times* announces the death of Prof. Johannes Lamp, one of the scientific members of the expedition which was charged with the demarcation of the boundary between German East Africa and the Congo State in the neighbourhood of Lake Kivu. Prof. Lamp, who was born at Kiel, was for some time employed at the Geodetic Institute in Berlin. He was afterwards appointed to the observatory at Kiel, and held a professorship at the University of that city.

WE learn from the *British Medical Journal* that a bust of Dr. Armauer Hansen, the discoverer of the bacillus of leprosy, will be unveiled with appropriate rites in the Lungegaards-Hospital at Bergen on August 10. In order to give the ceremony as much of an international character as possible, an invitation has been issued to prominent members of the medical profession throughout the world by Prof. Rudolf Virchow, president of the committee. Gerhard Henrik Armauer Hansen was born at Bergen in Norway in 1841, and has spent the whole of his professional life in that town, where he was for many years on the staff of the Lungegaards-Hospital.

IT is stated by the *Engineer* that the General Electric Company of Berlin has just completed near Naples, in the valley of Pompeii, an installation for the transmission of electric energy, all the conductors used being of aluminium. This installation comprises three horizontal turbines of 150 horse-power, working at 190 revolutions per minute. These turbines each drive a triphase alternator, and the current, at a tension of 3600 volts, is led along three aluminium lines to Pompeii, Sarno and Torre Annunziata. The first of these lines, which has a length of about 3 kilometres, leads to a substation comprised of two three-phase transformers of 45 kilowatts. The second line, which leads to Sarno, has a length of 15 kilometres; it conducts the current to a tri-phase motor working at 3500 volts, and driving a continuous-current dynamo of 36 kilowatts capacity. This installation supplies a three-wire system at a tension of 240 volts. Finally, the line to Torre Annunziata has a length of 3·5 kilometres, the current serving for motive power in the macaroni factories in the district.

IN an interesting and useful supplement to the Daily Weather Report, the Meteorological Council have published values for pressure, temperature, rainfall and bright sunshine for each month of the year. The sunshine values refer to a period of twenty years, temperature and pressure thirty years, and rainfall thirty-five years, all ending with the year 1900. With regard to temperature, a glance at the tables shows when the highest maxima of the period occurred. The maxima in London were: 96° (August 1876), 91° (June 1878), 95° (July 1881), and 91° (September 1898). The coldest winters occurred in 1881 and 1895, the lowest readings in London being respectively 9° (January) and 10° (February). Much lower readings were registered in other parts of England and in Scotland.

WE have received the Report of the director of the Liverpool Observatory, Bidston, containing the result of the astronomical and meteorological observations taken in the year 1900. The work of this Observatory dates back to the year 1845, and the observations, which are taken with every care, form a very valuable contribution to our knowledge of those sciences. The transit instrument has been used continuously for the determination of time and continues to give entire satisfaction, and the self-recording meteorological instruments have worked without failure the whole of the year. A Milne seismometer, provided by the Earthquake Committee of the British Association, has recently been added to the existing apparatus. As in former years, a useful comparison has been made between the records of Osler's and Dines' anemometers, and the results for each day tabulated. During a very severe gale on December 28, 1900, the Osler instrument recorded a pressure of 44·4 pounds on the square foot, the resulting maximum velocity shown by the Dines' anemometer being eighty-two miles.

M. ARÇTOWSKI, of the *Belgica* Expedition, contributes to *Ciel et Terre* a note on the climate of glacial periods. Assuming the changes in the level of the snow-line to have been due to changes of temperature only, M. Arçtowski compares its present position at Cape Horn and in South Georgia, and estimates the corresponding differences of mean temperature, obtaining for a difference of level of 800 to 900 metres a difference of temperature of about 8° C. He urges the special importance of studying the conditions in oceanic climates, and expresses the opinion that the exploration of the Antarctic regions will give the true explanation of the occurrence of glacial periods.

WE have received from the authors a reprint of a paper published in the *Memoires* of the Belgian Academy of Sciences, by MM. H. Arçtowski and A. F. Renard, on the soundings and bottom deposits obtained during the expedition of the *Belgica*. Although this is a preliminary report, it is not expected that the detailed examination of the deposits, which remains to be completed, will seriously modify the conclusions arrived at. The most important points disclosed by the soundings are the existence of a depression of 4040 metres to the south of Staten Island, and of a continental plateau extending south of the 70th parallel. It is noteworthy that the boundary of this plateau is indicated by the isobath of 500 metres rather than by the usual 200 metres. In examining the deposits, the methods employed by Thoulet have been employed in preference to those of Murray and Renard, as the samples are chiefly terrigenous. The chief interest lies in the obvious iceberg origin of most of the deposits, indicating the presence of glaciers on continental land to the south and east of the region of the *Belgica's* drift. Another feature is the interruption of the zone of diatom ooze in this region.

AN account of the first voyage of the Norwegian fishery steamer, *Michael Sars*, during the summer of 1900, by Prof. Hjort, is published in the last two numbers of *Petermann's Mitteilungen*. The paper consists of three distinct parts—(1) oceanographical results, by Bjorn Helland-Hausen; (2) the distribution of some of the chief forms of Plankton in the Norwegian Sea, by Dr. H. H. Gran; and (3) fishery investigations, by Dr. Hjort. The course of the expedition was from Bergen, across to Iceland, along its north coast to Denmark Strait, thence to Jan Mayen, the Lafotens, Porsanger Fjord, Bear Island, westward to near long. 10° E., and home. The cruise lasted from July to September, and these preliminary results afford important extension and confirmation of the work of the Danish *Ingolf* expedition in the same regions.

THE July Pilot Chart for the North Atlantic and Mediterranean, issued by the Meteorological Office, shows graphically the general circulation of the air and of the sea for the month. The region in which gales form as much as 10 per cent. of the wind observations is now limited to the immediate neighbourhood of the southern extremity of Greenland. With the month of July the conditions in the tropics begin to assume a more disturbed appearance, and the seaman consequently finds the letterpress to be largely devoted to a description of West Indian hurricanes and a concise summary of practical rules for handling ships in or near these storms. The path of one of the hurricanes of July 1837 is shown on the chart. As only 355 hurricanes have been recorded in 300 years, the annual average is little more than one, but in July 33 were experienced last century, so that one may be expected every three years in this month. A good deal of information is given on the winds in the Dardanelles. An inset chart gives a thunderstorm type of pressure distribution over western Europe, the remarks stating that there are three distinct classes, (1) those coming from the southward; (2) those forming locally; and (3) those appearing as secondaries to depressions in the north. The first of these is the one illustrated. It is interesting to observe how the shading representing fog has been expanding month by month, until in July it extends without a break right across the Atlantic between 40° and 50° N., but it is only about the middle of the Bank of Newfoundland that the frequency amounts to 50 per cent. Mariners going up the Labrador coast are informed that during the few days of summer the displacement of the horizon by mirage in this neighbourhood occasions great difficulty in obtaining good observations for position. The north-eastward extension of the Gulf Stream drift towards our coasts, which was shown to be interrupted in May and re-established in June, is again overcome by a general southward flow of the surface water between 10° and 30° W., the Gulf Stream water apparently not extending northward of the 50th parallel even on the western side of the ocean. Icebergs have at last appeared about the banks, a number having been sighted between April 30 and June 1, nearly all clustering about 48° N. 48° W., but one in 46° N. 56° W.

WE drew attention in NATURE (January 17) to the first number of the *Geologisches Centralblatt*, which is edited by Prof. Dr. K. Keilhack. We have since received Nos. 2 to 10, the last named published on May 15. The total number of works dealt with is 1027, so that our estimate that about 2500 will be recorded in the year is probably correct. It is hardly possible to judge of the completeness of the record until the volume for the year is published, but we think that space could be saved by shorter notices of works that are not original articles, such as excursion notes, popular general papers on geology and economic products, text-books, &c. As an illustration of somewhat unequal treatment we observe that the notice of the Summary of Progress of the Geological Survey of the United Kingdom occupies two pages, and that of the Summary Report of the Geological Survey of Canada only five lines. A valuable feature in the work is the insertion of tables showing new groupings of strata and revised classifications of organic remains. Taken as a whole, it cannot fail to be of permanent service to geologists.

THE University of Nebraska publishes a contribution (No. 5) to the Botanical Survey of Nebraska, conducted by the botanical seminar. The present instalment consists of a number of papers on the general features of the flora rather than of lists of species.

IN the *Journal* of the Royal Microscopical Society for April and June are two of Mr. E. M. Nelson's useful papers on the construction of the microscope—on tube length and on the working aperture. Mr. Nelson points out that there are no less than three different measurements known as tube lengths, viz. the mechanical tube, the natural optical tube length, and the conventional optical tube length. A table is given of the variations in the lengths of the two different optical tubes for the objectives of various makers and the effect these variations have upon the power. In the second paper Mr. Nelson advocates the importance of distinguishing more accurately than has hitherto been the practice the precise ratio of the diameter of that part of the objective which is utilised to the diameter of the lens itself.

THE report of the experiments superintended by the Department of Agriculture in Cambridge University has just been issued. The experiments are conducted on various farms in the adjoining counties, which contribute towards the expenses of the Agricultural Department at the University. The volume issued is really a bundle of reports written by different persons, and no attempt is made to describe the work as a whole. Most of the experiments are of considerable interest, and will be of practical value in their respective localities. More exact descriptions of the conditions of each experiment are, however, required if any real addition to our knowledge is intended. An analysis of a soil conveys no certain information unless we know the depth which the sample represents. We cannot interpret the variable action of manures unless we know the rainfall during the seasons in question.

IN part iv. of vol. xxii. of the *Notes* from the Leyden Museum, Dr. O. Finsch catalogues the birds of the "South-west Islands," with three coloured plates of some of the less known species. The small islands in question form a chain stretching from the northern extremity of Timor in an easterly direction to Timorlaut. Although the birds from some of these islets have been described by the officials of the Tring Museum, of others the bird-fauna is practically unknown. Dr. Finsch records a total of 123 species. One of the most striking and beautiful of these is the great red-brown fruit-pigeon named by Schlegel in honour of Dr. Hoedt, a former worker on the avifauna of these islands. For the future, the author suggests that this bird should represent a genus by itself, and be known as *Alopecaenus hoedti.*

THE number of new generic, specific and subspecific names that have been proposed for North American mammals during the last twenty years is so enormous that it was a matter of the greatest difficulty for a student to be certain that he had exhausted the list in any particular group upon which he might be engaged. This difficulty has been removed by the appearance of a "Synopsis of the Mammals of North America and the Adjacent Seas," by Dr. D. G. Elliot, which forms vol. ii. of the zoological series of publications of the Field Columbian Museum. The synopsis is well illustrated by reproductions from photographs of skulls. Although the author states that many of the species and subspecies recorded are probably nominal, the task of abolishing such superfluous names is left to his successors. In the main the work appears to be very accurate, but we notice a few omissions, and when describing the wood-bison the author states that it is a larger animal than its cousin of the plains, although the measurements given of the two forms indicate just the contrary.

IN the issue of *Die Umschau* of June 15, Prof. W. Amalitzky announces the discovery of gigantic anomodont and other reptiles in a Permian deposit at Sokolki, on the Dwina, Russia. The bones occur in an old river channel cut in Lower Permian beds and subsequently filled up with sandstone. Regular excavations have been undertaken, with the result that a very large number of skeletons and separate bones have been disinterred. Most of these are embedded in hard nodules, and a considerable sum of money is required for their proper development. Most noticeable is the discovery of no less than from fifteen to twenty skeletons of the huge anomodont Pariasaurus, hitherto known only from South Africa. One of these has been developed, and measures 11 feet in length. Remains of Dicynodon and other anomodonts, as well as dinosaurs and a labyrinthodont, are likewise recorded. According to Prof. Amalitzky, the reptilian remains are associated with ferns belonging to the well-known "Glossopteris flora"; and it would accordingly appear that this peculiar southern fauna and flora, which formed a belt round the globe in low latitudes during early Mesozoic times, had a northern extension into eastern Europe.

THE *American Museum Journal* for April and May contains a figure of one of five specimens of the Greenland musk-ox which have recently been mounted for exhibition. This form of musk-ox, it will be remembered, was described not long ago in NATURE as *Ovibos moschatus wardi*; and the American Museum has now acquired a fine series of specimens, which have enabled Dr. J. A. Allen to point out characters regarded as sufficient to justify the assignation of specific rank to this animal. On a later page of the same journal, stress is laid on the importance of exhibiting in museums groups of mounted mammals and birds amid their natural surroundings, as it is by this means alone that their full educational value can be obtained from the specimens. By the aid of liberal donations from private sources, much has already been done in this way in the American Museum, and it is confidently hoped that still more will be accomplished in the near future. It is a matter for regret that, so far as the larger mammals are concerned, little or nothing of this sort has hitherto been attempted in our own national collection. But millionaires in this country do not seem inclined to devote some of their spare thousands to such objects.

AN address on the historical development and the problems of anthropology, delivered by Dr. B. Hagen at the anniversary gathering of the Senckenberg Society of Natural Science, Frankfort on the Main, last year, has been translated by Mr. W. L. H. Duckworth and published by the Anthropological Laboratory, Cambridge. According to the translation, which alone has reached us, Dr. Hagen adopts a common but somewhat arbitrary division of the science of man into "anthropology," which deals with the physical structure of man and "the mode of life," and into "ethnology," or psychical aspect, comprising folk-lore, comparative psychology, sociology and psycho-physics. It is not clear what "the mode of life" means or why that is regarded as physical and the investigation of the senses and sense organ entirely relegated to "ethnology." Speaking of craniology, Dr. Hagen states that "we are not at the present day in a position to determine with certainty the racial identity of a given skull, with the exception, perhaps, of hyper-typical examples of Australians or Negroes." He believes there is but a single cranial type, the mesocephalic, of whose varieties the dolichocephals and brachycephals are the opposite extremes. "Stature is also a dangerous pitfall for metrical anthropology in general." Evidently the "anthropologists" of this classification cannot reduce the facts of the study of man into order without the help of the "ethnologists;" but we are warned that "the linguist must not regard the ethnologist, nor he in turn the anthropologist, with disdain."

CATALASE is the name given to a new enzyme of general occurrence described by Dr. Oscar Loew in Report (No. 68) of the U.S. Department of Agriculture (Division of Vegetable Physiology and Pathology) with special reference to the tobacco plant. This enzyme possesses the power of producing catalytic decomposition of hydrogen peroxide, a decomposition which, according to the author's experiments, is probably not produced by any other known enzyme. The enzyme appears to exist in an insoluble and in a soluble form, which are designated α- and β-catalase respectively. The former is probably a compound of the soluble catalase with a nucleo-proteid, while the β- form is an albuminose and can be liberated by the action of very dilute alkaline media upon the insoluble catalase. The behaviour of the enzyme towards various salts, acids, bases and other reagents has been carefully investigated. Experiments on the nature of catalase indicate that it is an oxidising enzyme, the most characteristic reaction studied in this direction being its rapid oxidation of hydroquinone to quinone. Numerous tests have established the general occurrence of catalase in the vegetable kingdon. No living plant or vegetable organ tested was found free from it, some plants containing more of the soluble, others more of the insoluble, form. In the animal kingdom it also appears to be widely distributed, having been found in aqueous extracts of spleen, pancreas, liver, kidney, brain, muscles and blood serum. Infusoria, insects, worms and molluscs were also examined, with positive results.

THE additions to the Zoological Society's Gardens during the past week include two North African Jackals (*Canis anthus*) from Algeria, presented by Mr. G. E. Hope; a Rhesus Monkey (*Macacus rhesus*) from India, presented by Mrs. Mould; a Suricate (*Suricata tetradactyla*) from South Africa, presented by Captain R. Feilden; a Leopard (*Felis pardus*) from Africa, presented by Captain G. Burrows; two Stanley Cranes (*Anthropoides paradisea*) from South Africa, presented by Mr. A. W. Guthrie; a Yellow-cheeked Amazon (*Chrysotis autumnalis*) from Honduras, presented by Mrs. Bullock; a Rough-legged Buzzard (*Archibuteo lagopus*) from Norway, presented by Dr. E. A. Williams; a Leopard Tortoise (*Testudo pardalis*) from South Africa, presented by Major J. Day; five Leith's Tortoises (*Testudo leithi*), eight Basilisk Chameleons (*Chamaeleon basiliscus*), two Common Chameleons (*Chamaeleon vulgaris*), three Schneider's Skinks (*Eumeces schneideri*) from Egypt, presented by Mr. Stanley S. Flower; a Spix's Macaw (*Cyanopsittacus spixi*) from North Brazil, two Barbary Wild Sheep (*Ovis tragelaphus*) from North Africa, a West African Python (*Python sebae*) from West Africa, fourteen North American Trionyx (*Trionyx ferox*), six Lesueur's Terrapins (*Malacoclemmys lesueuri*) from North America, seven Roofed Terrapins (*Kachuga tectum*) from India, two South American Rat Snakes (*Spilotes pullatus*) from South America, three Cunningham's Skinks (*Egernia cunninghami*) from Australia, two Wallace's Lories (*Eos wallacei*) from Waigiou, a New Zealand Parrakeet (*Cyanorhamphus novae-zealandiae*) from New Zealand, deposited; two Spoonbills (*Platalea leucorodia*), European, purchased; a Burrhel Wild Sheep (*Ovis burrhel*), a Squirrel-like Phalanger (*Petaurus sciureus*), two White Ibises (*Eudocimus albus*), bred in the Gardens.

OUR ASTRONOMICAL COLUMN.

SPECTRUM OF NOVA PERSEI.—In the current issue of *Comptes rendus* (vol. cxxxii. pp. 1542-1544) M. Deslandres gives a third series of observations of the spectrum of Nova Persei as obtained at the Meudon Observatory. Since the previous communication, spectrographs of varying power have been installed for use with the two telescopes of 0·84 metre and 0·60 metre aperture, and both photographic and visual records of the spectrum obtained during the periods of minima, although unfavourable weather has considerably interfered with their continuity. In this later work special attention has been devoted to the expected detection of the principal nebular lines. M. Deslandres states that during the first stages the principal green lines present were distinctly not the nebular lines, but the lines of parhelium, λ492 and λ5015, this being well shown in a photograph taken on March 3. On a plate taken on April 17, however, the measured position of the chief green line was λ5008, but on account of breadth of line the value is of course only approximate. The star was near its minimum brightness on this date. The gradual varying intensity of this line relative to the $H\beta$ line of hydrogen is then described, the details being in close agreement with those already published by other observers.

On May 14 a fainter line was seen near the next nebular line, about λ4959, the star being less than 7th magnitude, and he concludes that at that time the spectrum of the Nova was completely nebular, also mentioning that M. de Gothard had detected the ultra-violet nebular line λ386 in the spectrum of the star.

DARK SPOT ON JUPITER.—In the *Astronomische Nachrichten* (No. 3724) Mr. T. E. R. Phillips gives the results of several observations by others and himself extending from March 2 to June 2.

The spot as seen by these observers is in the white north tropical zone, in about latitude +15°. At present it appears to be quite detached from the northern edge of the north equatorial belt, but when first seen gave the impression of being merely a dark projection from that belt into the north tropical zone. Possibly the reason for the present appearance is the apparent narrowing of the belt which has been observed for some time past.

A table is given showing the results of nine determinations, the discussion of which indicates a period of 9h. 55m. 29·7s.

THE METEORIC EPOCH OF JULY AND AUGUST.

METEORS are generally rare in the early part of the year, and, in May and June, twilight is so strong that it obliterates faint objects and leaves only the more conspicuous class of meteors observable. But in July, though the sky is still very light and the nights extremely short, these objects become fairly plentiful and particularly so during the last week of the month, when the horary rate of apparition is about three times as great as it is on ordinary nights of spring and midsummer. The meteoric observer regards July and August not only as one of the most productive seasons of work, but one which in the interesting character of its results will compare favourably with that of any other epoch of the year.

There is a rich shower of Aquarids annually visible on about July 27-31, and apart from this stream the great system of Perseids, which has rendered the month of August so famous in meteoric annals, has actively commenced and supplies no inconsiderable proportion of the shooting stars visible at the close of July. Other showers are plentifully distributed over the firmament, but the majority are very feeble and may only be distinguished by close and prolonged watching during several clear nights.

The writer recently undertook the rediscussion of about 260 meteors which he has recorded from the shower of Aquarids, in various years, with a view to discover whether there were any indications of motion in the radiant. Grouping the observations into short periods and deducing the place of the radiant for each of them, it was found that no displacements occurred other than those which might be fairly attributed to errors in registering the paths. The radiants came out as follow:—

	α	δ	
	°	°	
July 23–25	335	− 11	11 meteors
July 26–31	338	− 12	190 ,,
August 1–5	337	− 12	18 ,,
August 6–13	335	− 11	12 ,,
August 14, 1887 ...	335	− 10	5 ,,
August 18–25	339	− 11	20 ,,

The centre of radiation, like that of the October Orionids, appears, therefore, to be motionless, and it continues visible for more than a month. In observing this stream care must be taken not to confuse it with two other pretty rich and contemporary showers at 345°±0° and 339° − 30°. The latter is near the bright southern star Fomalhaut.

In this department the observer's efforts have to be regulated in a great measure by moonlight, and this year our satellite will interfere in the earlier and later part of July. But it is probable that, with suitable weather, the first indications of the Perseid display may be well observed on about July 11-15. As the radiant centre of this system travels E.N.E. with the time, the observer should keep his materials for each night separate, and determine the place of radiation on every date when the conformable paths are adequate for that purpose. This position can scarcely be defined, either with safety or accuracy, when less than five well-observed meteors have been registered from it. But it is often satisfactorily obtained when two observers at separate stations record the same meteor. In a case like this the evidence is conclusive as to the position of the radiant, though it may be rendered a little inexact by errors of observation. But in instances where meteors are seen at one place only there are possibilities of mistake in attributing the radiants, for these have necessarily to be assumed from the directions of flight and visible aspect of the objects observed. In the case of the Perseid shower there is not, however, much probability that serious errors will occur in this respect, but everything depends upon the discrimination and discretion of the observer.